Australian alpine scapose radiate taxa of *Senecio* (Asteraceae)

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ABSTRACT

Alpine Australia has a distinctive group of seapose radiate taxa of *Senecio* (*Asteraceae*). *Senecio papillosus* F.Muell. and *S. primulaefolius* F.Muell. are easily distinguished but need elarifieation of publication date and typification. Two varieties of *S. pectinatus* DC. occur only in Tasmania, var. *pectinatus* and var. *ochroleucus*. The latter, incorreetly attributed to L. Rodway (1903), was validly published by Mueller in 1871. *Senecio pectinatus* var. *major*, found only on the mainland, is described as new. *Senecio leptocarpus* DC is maintained as a species, rather than as *S. pectinatus* var. *pleiocephalus* Benth. A distinet montane pseudolautusoid taxon, deseribed in 1903 as *S. pectinatus* var. *pleiocephalus* Rodway (non Benth.) and in 1969 as *S.* [*aff.*] *lautus* subsp. *alpinus* Ali, is here placed as var. *pleiocephalus* of *S. pinnatifolius* A. Rich. Seaposc and subscapose forms of it oeeur both on the mainland and in Tasmania, along with the more eommon bushy state. A key to all of these taxa is provided.

Introduction

Candolle in 1838 described *Senecio pectinatus* and *S. leptocarpus* from seaposc speeimens eolleeted in 'van Diemen's Land' by R.L. Gunn and conveyed to Candollc by Lindley in 1834. These differed in size and infloreseenee, the former small and with only one eapitulum per seape, the latter larger and with a few heads (oligoeephalus). Ferdinand Mueller in 1857 added two more seapose alpine species, *S. papillosus* and *S. primulifolius*, based on eollections by C. Stuart in Tasmania. These two taxa have been but rarely collected, are readily distinguishable (as shown in the key below), and have never been in eonfusion. There are, however, some diffieulties with their dates of publication and typifieation. The spelling of the latter epithet is eorreeted to *primulaefolius*. The Candollean speeies have been somewhat controversial. J.D. Hooker maintained both, adding further differences and illustrating a very robust specimen, colleeted by himself, as *S. leptocarpus*. Bentham reduced this species to *S. pectinatus* var. *pleiocephalus* Benth., meaning 'more than the usual [number of] heads'. Both of these authors included in *S. pectinatus*, in addition to the typieal material from Tasmania, certain larger speeimens colleeted by Mueller in the Victorian Alps (which I recognise as var. *major*) and disregarded the varietal epithet ineluded on his labels.

The above-named scapose taxa share a number of traits not seen eombined in any other taxon of *Senecio* in Australia. These include eonsistently seapose habit, strongly reduced number of and large capitula, elongate phyllaries, and unusually long ealyeular braeteoles inserted on long tapering reeeptaeles. A further search would probably reveal still other distinetive features held in eommon. Whether this phenetie grouping is also phylogenetic, or not, should be the foeus of a thorough cladistie review whieh I have not been able to undertake. An appropriate outgroup for that review eould well be the pseudolautusoid alpine taxon treated at the end of this paper.

Confusion over the Candollean taxa was compounded by L. Rodway, who began with a good original deseription of *S. pectinatus* [var. *pectinatus*]. He then wrote:

> 'This species is most variable. The following are marked varieties: var. *ochroleuca* ....var. *leptocarpus* [i.e. var. *pleiocephalus* Benth.] ....var. *pleiocephalus* [non Benth., based on pseudolautusoid specimens from Ironstone Mountain] ....'

He did not cite authorities for these, so 'var. *ochroleuca*' has ineorrectly been attributed to him; it aetually was validly published by Mueller in 1871 (see below).

Curtis (1963) followed Hooker in maintaining both '*S. pectinatus* / Incl. *S. pectinatus* var. *ochroleuca* Rodway..' and '*S. leptocarpus* DC. / *S. pectinatus* var. *pleiocephalus* Benth.'. Rodway's var. *pleiocephalus* was not mentioned, and its identity has remained obscure until now.

Finally in this context, Ali (1969) described *S. lautus* subsp. *alpinus*, with a very brief diagnosis, and cited specimens from Tasmania as well as from New South Wales and Victoria, some of them clearly scapose. Understandably, he did not connect his new taxon to the pseudolautusoid *S. pectinatus* var. *pleiocephalus* of Rodway, perhaps because of Rodway's puzzling disclaimer about its bracts (see below).

My own observations in numerous herbaria (including all type specimens), plus my experience with some of these taxa in the field, have convinced me that *S. leptocarpus* is a valid species and should be maintained separate from *S. pectinatus*, that var. *ochroleucus* is readily distinguishable in the field and in the herbarium by characters other than just the color of its rays, and that the mainland specimens of *S. pectinatus* are varietally distinct from those of Tasmania. I refer *S. pectinatus* var. *pleiocephalus* L. Rodway (non Benth.) to the *S. pinnatifolius* complex as var. *pleiocephalus*.

KEY TO RADIATE ALPINE TAXA OF *SENECIO*

1 Leaves usually well-distributed up the stem and more or less deeply pinnatipartite; on scapose or subscapose specimens less dissected and rapidly reduced to bracts; capitula 3-4 per unit inflorescence, to 50 or more, cylindrical; phyllaries 13, bi-ribbed, (3.5-)4-5 mm long; calycular bracteoles 1-2.5 mm long in a whorl near apex of peduncle, below but partially enclosing the receptacle ..... ***Senecio pinnatifolius* var. *pleiocephalus***

1: Most leaves crowded near the base, reduced to bracts on the scape; leaves entire or shallowly toothed or lobed; capitula few (2-6) or solitary, broadly campanulate; phyllaries 13-16(-22), not strongly bi-ribbed but flat, 7-8(-12) mm long; calycular bracteoles 4-6(-10) mm long, inserted on the receptacle 2

2 Width of leaf less than 1/4 of its length, blades narrowly elliptic or spathulate or oblanceolate, or long-subpetiolate with short terminal blades 3

2: Width of leaf about 1/3 or more of its length, leaf blades broad, ovate to elliptic to obovate 4

3 Basal leaves narrowly elliptic to obovate or long- subpetiolate, narrowly or broadly lobate or merely serrulate, green beneath, scape with 1 capitulum (rarely 2 capitula) ..... ***Senecio pectinatus* and vars.**

3: Basal leaves spathulate, often briefly subpetiolate, coarsely serrate, silvery beneath; scape with (2-)3-6(-8) capitula (rarely 1) ..... ***Senecio leptocarpus***

4 Leaves petiolate, glabrate above; scape with 1-4 capitula ..... ***Senecio pinnulaefolius***

4: Leaves sessile or very briefly petiolate, clothed above with short stiff multicellular hairs from tuberculate bases; capitulum 1 ..... ***Senecio papillosus***

Taxonomy

Senecio pectinatus DC., *Prodr.* 6: 372 (1838); Hook.f., *Fl. Tasm.* 1: 222 (1856), *sensu lat.*; Benth., *Fl. Austral.* 3: 664-665 (1867) *pro parte* (excl. var. *pleiocephalus* Benth.).

HOLOTYPUS: Tasmania, 1832, *Gunn 107* (G-DC). ISOTYPI: *Gunn 107* (CGE; K; OXF; probably others, *n.v.*). Note: Hooker gives 'Hab. Mount Wellington, *Gunn*'.

Perennial scapose herbs. Scapes decumbent or erect, terminating in a single large capitulum (rarely 2 capitula, on short peduncles); moderately to densely hairy, hairs reddish, short, multicellular, more or less curled. *Leaves* narrow, green beneath. *Capitulum* pressed to 1-3(-4) cm across, exclusive of spreading rays. *Involucre* broadly campanulate. *Phyllaries* elongate, flat, 1-2 nerved, margins scarious; *calycular bracteoles* linear-

lanceolate, inserted on the long-tapered receptacle, almost as long as the phyllaries. *Rays* yellow or white to ivory.

DISTRIBUTION
Alpine areas of the Australian Capital Territory, New South Wales, Victoria, and Tasmania.

DISCUSSION
This taxon occurs in three clearly marked varieties: two that are endemic to Tasmania, the other confined to high elevations on the mainland. The following descriptions of the well-known Tasmanian varieties are briefer than that of the new mainland var. *major*.

KEY TO VARIETIES OF *SENECIO PECTINATUS*

1 Plants 10-45 (or more) cm tall; basal leaves usually long-subpetiolate, blades with lobes about as broad as long; pressed capitulum 2-3(-4) cm across (exclusive of rays); scapes 2-4 mm in diameter ..... var. ***major***
1: Plants 5-12 cm tall, or slightly more; leaves sessile, crowded; pressed capitulum 1-1.5 cm across (exclusive of rays), scapes c. 1 mm in diameter 2

2 Basal leaves pectinately lobed, lobes about twice as long as broad; lower bracts of scape more or less. pectinately dissected; rays yellow ..... var. ***pectinatus***
2: Basal leaves linear or oblanceolate, serrulate; lower bracts of scape entire or minutely serrulate; rays white to ivory ..... var. ***ochroleucus***

Senecio pectinatus DC. var. ***pectinatus***

TYPIFICATION: as above (*Gunn 107*, G-DC).

Scape (8-)10-15 cm tall, 0.8-1 mm in diameter. *Basal leaves* in a compact rosette, some subpetiolate, lanceolate, 2.5-3(-5) cm long, 3-7 mm broad, imparipinnately lobed. *Lobes* pectinate, 4-5 on either side and 1 terminal, lateral ones c. 1/2 as broad as long, callose-apiculate, inclined 30-45° from the broad rachis. *Bracts* reduced, scattered on the scape; lower ones briefly pectinate with lobes c. 1/4 as broad as long, long-acuminate; upper ones entire, almost linear. *Capitulum* pressed to 1.5-2 cm across, exclusive of rays, c. 1 cm long. *Phyllaries* 13-18, 7-8 mm long, 1-1.5 mm broad, dark-tipped; *calycular bracteoles* 5-6, linear, 6-7 mm long, 1 mm broad. *Rays* c. 13, spreading, 8-9 mm long, 3-3.5 mm broad, yellow to golden yellow. Disc florets c. 30. (Fig. 1a)

DISTRIBUTION
Restricted to Tasmania, on the mountains and plateaux; said by Curtis (1963: 364) to descend to sea-level in the southwest, but I have not yet seen an herbarium specimen labelled as collected below 780 metres.

DISCUSSION
This, the first taxon of this complex to be described, is readily recognisable by its basal rosette of pectinately lobed leaves, the lobes about 1/2 as broad as long. It occurs on many of the same mountains of Tasmania as does var. *ochroleucus*, but the two do not seem to hybridize. A possible reason for this is discussed below in connection with the latter variety.

SELECTED OTHER SPECIMENS EXAMINED
TASMANIA: Mt de la Perouse, 1 Mar. 1857, *C. Stuart 1869* (MEL, initialed 'B', seen by Bentham); Eldon Bluff, Mar. 1873, *Gulliver 24* (MEL); Mt Darwin, 1890, *Moore s.n.* (MEL, P); Hartz Mtn., Dec. 1894, *L. Rodway s.n.* (HO 81449); Mt Ironstone, Dec. 1899, *F.A. Rodway 5102* (NSW 117877); Breona, Great Lake, c. 55 km SW of Launceston, 20 Jan. 1949, *J.B. Cleland s.n.* (AD 97306100); Great Lake, 3300 ft, roadside, 20 Jan. 1949, *L.B. Moore* (CHR 66809); Mt Field National Park, Lake Dobson, wet peaty soil, 22 Jan. 1949, *N.T. Burbidge 3273* (CANB 19598); Near Pine Lake, 1188 m, *Feb. 1957, L.J. Webb 3374* (BRI 270947); Mt Field National Park, Lake Beleher, track beyond saddle, 2 Feb. 1969, *E.M. Canning 2209* (CBG 030969); Cradle

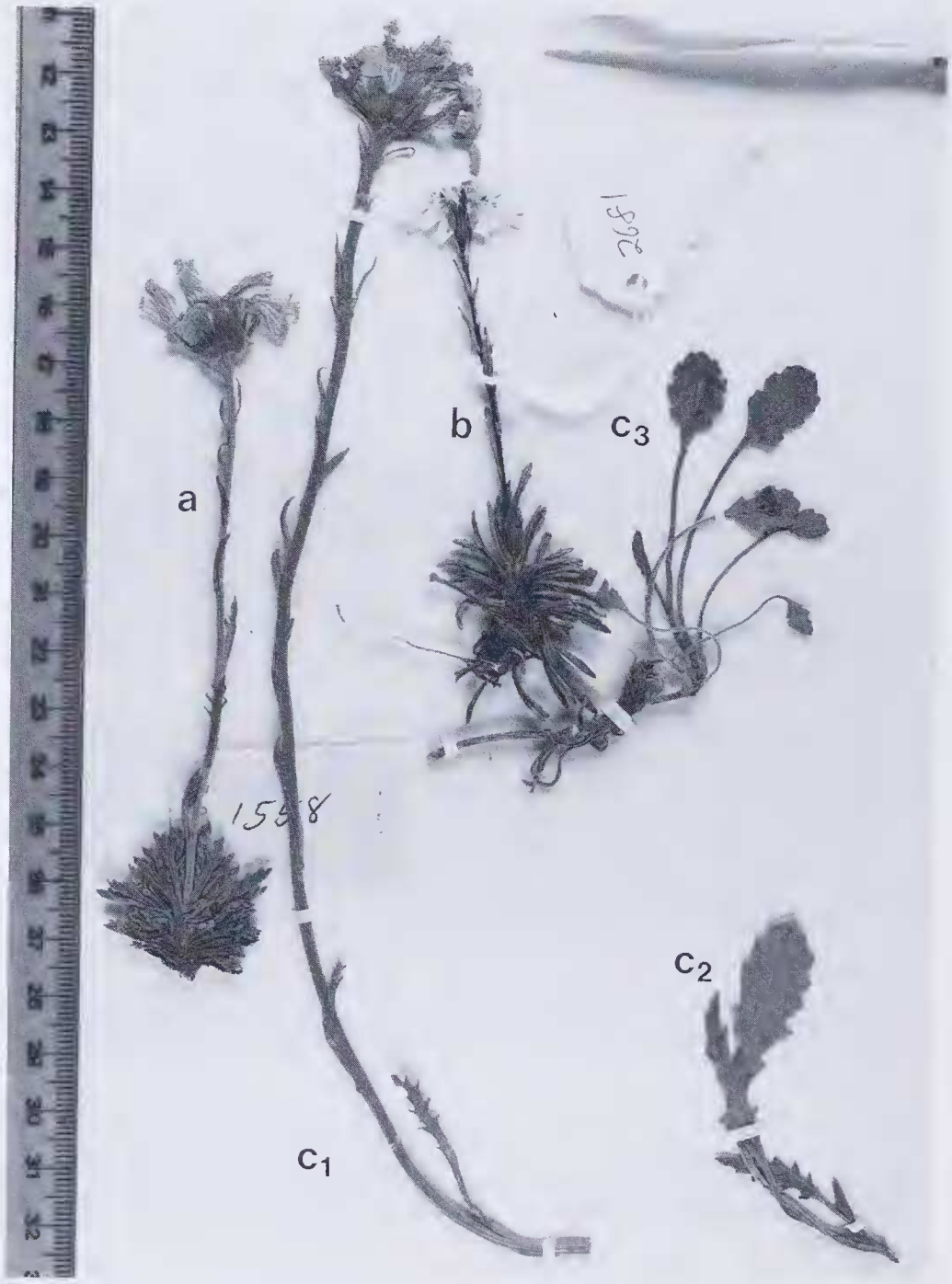

Fig. 1. Varieties of *Senecio pectinatus* DC., contrasted by showing an unmounted specimen of each Tasmanian variety superimposed on a portion of the holotype sheet of var. *major* from Victoria. **a** - var. *pectinatus*; from *R. & R. Belcher 1558*, Cradle Mt (EMC). **b** - var. *ochroleucus*; from *R. Belcher 2681*, Mt Wellington (EMC). **c** - var. *major*; from portion of holotype sheet, *F. Muell.*, Cobboras mountains (MEL 666920). c - 1. upper portion of scape. c - 2. lower portion of same scape. c - 3. short portion of a separate rhizome with clustered petiolate leaves (rhizome for 1 and 2 present on right side of sheet, not shown).

Mtn, c. 50 ft below summit, in crevice in basaltic scree, 23 Feb. 1968, *R.& R. Belcher 1558* (EMC, K); Projection Bluff, 4000 ft, 29 Jan. 1973, *D.A. & A.V. Ratkowsky 66* (MO 2414011, CHR 258334; other duplicates to numerous herbaria, n.v.).

Senecio pectinatus var. ***ochroleucus*** F. Muell., in *Papers & Proc. Roy. Soc. Tasm. for 1870*: 16 (1871) [as var. *ochroleuca*]; var. *ochroleuca* s. auth., L. Rodway, *Tasm. Fl.* 93 (1903); var. *ochroleuca* L.Rodway, Curtis, *Student's Fl. Tasm.* 2: 364 (1963); var. *ochroleucus* L.Rodway, Curtis, *Endemic Flora of Tasmania* Pt. 4: 238 (1973).

Illus. M. Stones, Pl. 74, No. 123, in *Endemic Flora of Tasmania*, Pt. 4: 237 (1973).

TYPUS: Tasmania, Mt Wellington, 4600 ft [1420 m], Jan. 1869, *F. Muell. s. n.* LECTOTYPUS (**here chosen**): MEL 666924; REMAINING SYNTYPES: MEL 666922, MEL 666923. Of the three sheets, MEL 666924 is here chosen as lectotype because it alone has the diagnostic phrase, 'ligulis fere albis'. Labels on the other two sheets carry only the epithet, locality, and date.

Scape (5-)9-15(-33) cm tall, 1-1.2 mm in diameter. *Basal leaves* in compact rosette, 1-2(-2.5) cm long, 1-1.2 mm broad, linear to linear-oblanceolate, serrulate. *Bracts* few, scattered along the scape, linear, subentire, 0.5-1.5 cm long, 1-1.5 mm broad, lower with 1-2 callose teeth near apex. *Capitulum* pressed to 1-1.5(-2) cm across, excluding rays, c. 1 cm long. *Phyllaries* 13-20, 7-9 mm long, 1-1.5 mm broad; *calycular bracteoles* 5-6, linear-lanceolate, 4-6 mm long, 1 mm broad. *Rays* 9-15, 8-9 mm long, (3-)4-5 mm broad, white to ivory. *Disc florets* c. 20-25. (Fig. 1b.)

DISTRIBUTION

In Tasmania where it is common on mountains and plateaux, especially in the south-west. Not known from mainland Australia.

DISCUSSION

Senecio pectinatus var. *ochroleuca* has been attributed to Rodway, even though he himself did not cite an authority. But in seaching unsuccessfully for a Rodway collection made prior to 1903 as a possible type, I came upon three (then unmounted) sets of specimens at MEL, each set with a label reading: 'Senecio pectinatus DC. / var. ochroleuca / Mt Wellington, Tasm. / 4000 ft. Jan 69'. These clearly predated Rodway's account.

Doris Sinkora confirmed that Mueller had indeed spent the first week of 1869 in Tasmania, botanising on both Mt Wellington and Mt Field. A check of citations in the catalogue of Mueller's publications (Churchill *et al.*, 1978: 83 *et seq.*) led to a series of 'Contributions to the Phytography of Tasmania'. No. II, as cited above, contains this entry: 'Senecio pectinatus Cand. prodr. VI. 372; var. ochroleuca [*sic*!]. This variety is frequent on the alpine plateau of Mt Wellington, but I did not observe it on Mt Field East. *It produces short-toothed leaves, single flower heads and ligules almost white* [italics mine]. Although *S. pectinatus* is widely spread over the Australian Alps, I never noticed it with cream-colored rays.' I regard this as valid publication.

This variety was not listed among the taxa of *Senecio* published by Mueller (Muir, 1979: 134). His authorship is here acknowledged, apparently for the first time. Rodway must have obtained the epithet from Mueller's article but failed to credit the source.

The feminine termination of the varietal epithet as given by Mueller and maintained by Rodway and by Curtis (until 1973: 238) has been here modified to masculine in accordance with Articles 24.2 and 32.6 of the International Rules of Nomeclature ('Tokyo Code', Greuter, 1994: 36, 43).

Recognition of var. *ochroleucus* in dried material is easy because of the distinctive leaves and bracts. The rays usually undergo discoloration during drying and are not then reliably different in color from dried material of the typical variety. Gunn surely distinguished between the fresh plants of his *107* and his *1147*, at least in ray color if not in leaf, but (typically) made no comment on it in his labels. I saw no material of var.

ochroleucus at Geneva, either in the Prodromus herbarium or in the general herbarium; Lindley apparently did not forward any of the latter number to Candolle.
The speeimens eited below were selected from a mueh larger number which I have seen, to show the early reeords and something of the geographical distribution, omitting many from Mt Wellington. It has not to my knowledge been eolleeted from the mainland alps; Mueller's statement, above, remains true.

I have had no opportunity to explore the basis for the differenees in leaf, braet, and ray between these two Tasmanian varieties. Even though both have been eollected repeatedly from the same mountains, I have seen no speeimens that would suggest introgression between the two. There must be some effeetive barrier to eross-breeding. It may well be that ecologieal preferenees provide the isolating mechanism.

I am indebted to David Ziegler of the Tasmanian Herbarium for this note on the setting for var. *ochroleucus*: 'From personal observation this variety favors sheltered locations amongst large summit boulders on the mountains of South West Tasmania. The sites tend to be at least partially shaded, sheltered from wind and possibly eovered with small snow patehes well into spring. The mountains are mainly of quartzite roek sueh as Mt Maeonoehie but I have seen it on Pindar's Peak whieh is dolerite. The plant forms loosely matted colonies up to e. 1 m square. On the north-east ridge of Mt Anne it occurs amongst eushion plants in boulster bog surrounded by subalpine shrubbery. This area is possibly subjeet to heavy and prolonged snow. It also occurs in wet shaded gullies on the southern side of quartzite peaks in the Western Arthur range.'

In eontrast, Ziegler stated that var. *pectinatus* is more likely to occur on drier and more open sites, such as the basaltie scree near the top of Cradle Mountain where I found it in 1968. It is true, however, that habitat notes on labels of this variety often mention wet sites. These relationships are in need of further investigation.

SELECTED OTHER SPECIMENS EXAMINED

TASMANIA: 'Table Mountain, Derwent River' [now Mt Wellington], 18-19 Feb. 1804, ***R.** Brown* (CANB 279182, ex BM); Mt Wellington, 7 Jan. 184[illegible] (?), *Gunn 1147* (K, 4 specimens on sheet with 5 specimens of *Gunn 107* [isotypes of var. *pectinatus*]; CGE in herb. Lindley, 4 upper specimens on sheet with 3 specimens of *Gunn 107*; CGE in herb. Lehman). S. loc., 3 Feb. 1849, *Milligan 1055* (OXF); Mt La Perouse, *Stuart* (MEL 667732); '*L.Rodway* [*s.n.*] 1892, Tasm.' on blue Phytological Museum label, det. *S. pectinatus* (MEL); Summit of Mt Wellington, Jan. 1913, *L. Rodway* (HO 14863); Mt Wellington, 6 Jan. 1987, *R. Belcher 2681*, (EMC); Cradle Mtn, between rocks on west side, 8 Jan. 1960, *Hj. Eichler 16507* (AD 96107070); Hartz Mtn. National Park, 15 Feb. 1968, *A. Himson s.n.* (K, used by M. Stones for her Pl. 74); Lake Esperance, subalpine herb field, 6 Jan. 1969, *I.R. Telford 2404* (CBG 828942, NE 024226); 3350 ft, 4 Feb. 1973, *D.A & A.V.Ratkowski 112* (MO 2317166, CHR 257691); Slope of Frenchman's Cap, forming loose mats, 8 Jan. 1981, *Buchanan 458* (CHR 394618).

Senecio pectinatus var. ***major*** F.Muell. ex Belcher *var. nov.*

differt a varietate typica foliis majoribus, petiolis longioribus, paginis spathulatis vel oblaneeolatis, lobis fere quadratis; braeteis inferioribus minus reduetis; scapis longioribus; capitulis majoribus. (Fig. 1 e.1, e.2, c.3.)

Perennial herbs, sometimes stoloniferous with stolons to 30 cm long. *Scapes* often purplish, glabrate to hairy; (8-)15-30(-50) cm tall. *Lower leaves* not densely erowded but somewhat scattered along base of seape, leaf base slightly flared to 4 mm broad, semi-clasping the node, abruptly reduced to 2 mm as a narrowly winged subpetiole to 4 cm long, expanding into an obovate to oblong-lanceolate terminal blade 1.5-2(-4) cm long and 1-1.5 em broad, blade coarsely lobed with lobes quadrate (about as long as broad). *Intermediate leaves* redueed in length and breadth, more briefly subpetiolate, with lobes quadrate or redueed to sharp almost linear teeth. *Bracts* on upper part of seape numerous, linear-lanceolate, entire, e. 1 cm long, 1-2 mm broad. *Capitulum* terminal, usually single but rarely a seeond smaller (less mature?) capitulum arises 3-4 cm below the terminal receptaele and on a pedunele e. 3 em long; pressed to (2-)2.5-3(-4) em across, excluding rays; 1.5-1.8 em long. *Phyllaries* (13-)16-22, 7-12 mm long, 1.5-3 mm broad. *Calycular bracteoles* (6-)8-10, 8-10 mm long, 1.2-1.6 mm broad. *Rays*

(12-)16-20(-22), yellow, 9-13 mm long, 3 mm broad; *disc florets* very numerous (to 90), golden-yellow.
(Fig. 1, c1, c2, c3; holotype.)

TYPUS: Victoria, Cobboras Mountains, [1854], *F. Muell.* HOLOTYPUS: MEL 666920; ISOTYPI: Cobboras Mountains, 6000 ft, *F. Muell.*, MEL 666921 ex Herb. Sonder; K (two specimens and two labels on one sheet, ex Herb. [W.J.] Hook.). The varietal epithet, *major*, means greater [than the Tasmanian varieties].

The holotype (MEL 666920) is annotated: 'Senecio pectinatus DC. / major ferd. Mueller / Weicht von DC Beschreibung / ein wenig in grössern Blumen / u. gezahnten Blattlappen ab / Cobboras Mountains', in Mueller's script. [This label is not shown in Fig. 1.] I am indebted to Doris Sinkora at MEL for this translation: 'differs slightly from de Candolle's description in larger flowers [capitula] and dentate leaf lobes'. This label (and therefore the specimen) is initialed as seen by Bentham. The isotypes at Kew were also annotated by Bentham and cited [as 'Mount Cobberas'] in Flora Australiensis, but without varietal recognition. The year for the type collection is from Gillbank (1992: 477): 'In January 1854 .... Mueller turned east toward the rugged Cobberas mountains and the adjacent plateaux'.

DISTRIBUTION
Australian Alps and higher subalpine areas, in the Australian Capital Territory, south eastern New South Wales, and north eastern Victoria. Not known from Tasmania.

DISCUSSION
I have yet to observe or collect this variety in the field. The herbarium specimens of var. *major* which I have examined exceed those of var. *pectinatus* and of var. *ochroleucus* in almost every dimension, as can be seen in Fig. 1, which shows my specimens of the latter two varieties superimposed on the holotype sheet. Furthermore, the lower leaves of var. *major* are usually long-subpetiolate, a feature not seen on the Tasmanian varieties.

Costin *et al.* (1979: 379) gave an excellent descrirption of var. *major* as '*S. pectinatus* DC. .... Alpine Groundsel'. Their description is not applicable to Tasmanian specimens, although they included Tasmania in the distribution. They then add: 'Common in tall alpine herb fields and sod tussock grasslands; a small, apparently distinct ecotype occurs in *Epacris-Chionohebe* feldmark.' This comment is echoed in an annotation on the Costin collection from near Mt Townsend (CANB 46770), cited above. It reads: 'also occurs as an ecotype on windswept alpine ridges'.

These comments appear to raise the possibility that var. *pectinatus* does indeed occur in the mainland alps. I did not find such a small specimen collected by Costin or by any of the other authors, either at CANB, at CBG, or elsewhere. The nearest approach was *Telford 3607A* (CBG 055449, cited below). This collection consisted of two small plants, one very small and not flowering but vegetatively consistent with the larger one, which is 8 cm long overall including a fragment of root. This latter specimen had one head on a scape 3 cm tall from rosette to receptacle. The capitulum had phyllaries 9 mm long, calycular bracteoles to 5 mm long, and was pressed to 1.3 cm broad and 1.1 cm high, exclusive of the 10 rays. This plant is the closest in size to var. *pectinatus* of any mainland material I have seen, but the scape lacks pectinate bracts. Its leaves, to 2 cm long and 6 mm broad, have 5 pairs of squarish lobes, as in var. *major*, not pectinate. This collection *may* represent the ecotype mentioned, but whether it does or not, it *is* of var. *major* despite its stunted size and *not* a mainland occurence of var. *pectinatus*.

At the other extreme in size are the specimens of *H. van Rees 314* (CANB, HO, below) from the Bogong High Plains in Victoria. It is probably significant that the elevation of only 1640 metres for these van Rees specimens is the lowest of all those cited for var. *major*. Both plants are unusually robust, to 50 cm tall, with the lowest leaf 15 cm long and 2.7 cm broad, and the leaves more scattered up the stem. In this it mimics the behavior of pseudolautusoid alpine *S. pinnatifolius* var. *pleiocephalus* (see below).

That latter taxon usually has fairly well-developed eauline leaves. But there are some high alpine eollections whieh have cauline leaves strongly reduced on deeumbent seapes from a basal rosette (but with the typieally small numerous heads of that variety), hencc my inelusion of it in the group of seapose alpine radiate taxa in this paper.

The larger size of speeimens of var. *major* suggests the possibility that they are polyploids of var. *pectinatus*. This is supported by the chromosome count of n=40, $2n$=80 reported by Lawrenee (1980: 154) for '*S. pectinatus*'. She made her count from the specimen from 'Speneer Creek, Mt Koseiusko National Park, N.S.W.' [*Lawrence 1397* (AD 98131070), below]. This spccimen is elearly var. *major*. This eould imply that var. *pectinatus* (and var.*ochroleucus*?) might have counts of n=20 and $2n$=40, but this of eourse requires investigation.

J.D. Hooker (1856: 222) eited three eollcctions under *S. pectinatus*; namely, '*Gunn (107, 1047)*' from Mt Wellington, and 'Cobboras [sic!] Mountains, elev. 6000 feet, Mueller'. If '*Gunn 1047*' is aeeepted as an error for the *Gunn 1147* speeimens mounted with *Gunn 107* at Kew as cited above for var. *ochroleucus*, Hooker had in hand material of all three varieties. His eomprehensive deseription gives their distinguishing eharaeteristies, henee *sensu latiore*. It is surprising that he did not deseribe varieties, as he often did in eomplex taxa.

Bentham's description (1867: 664-665) likewise applied to all three varieties but also ineorporated *S. leptocarpus* DC. (as his var. *pleiocephalus*), a position whieh I challenge (below).

The brief description by Willis (1973: 748), with leaves 'crenately toothed oblaneeolate', the Victorian distribution and at least some of the illustrations eited apply only to var. *major* and not to the Tasmanian varieties.

SELECTED OTHER SPECIMENS EXAMINED

AUSTRALIAN CAPITAL TERRITORY: Namagi National Park, about 1/2 km NW of Bimberi trig tower, 1830 m, wet heath, 5 Feb. 1985, *C. Helman 252 & P. Gilmour* (CBG 8601625).

NEW SOUTH WALES (all from within what is now Kosciusko National Park): Snowy Mtns, Feb. 1890, *W. Bauerlen 66* (MEL 1533870). Mt Kosciusko, Feb. 1901, *R. Helms* (MO 831331, ex NSW). Summit of Mt Kosciusko, 15 Jan. 1951, *J.B. Cleland* (AD 97311132). Above Lake Albini, 1740 m, 20 Jan. 1951, *Johnson & Constable* (NSW 15808, CHR 72739, K). Alpine herb field near Mt Townsend, c. 7000 ft, 18 Jan. 1958, *A.B. Costin 0018* (CANB 46700). Lake Cootapatamba, granite rock area near small stream, 28 Feb. 1960, *M. Gray 4788* (CANB 114494). Mt Northcote-Mt Lee Saddle, fjeldmark at c. 2100 m in bog area, 11 Mar. 1974, *I.R. Telford 3706A* (CBG 055449), small (see below). Kosciusko, where Mt Kosciusko Summit Road crosses Spencer Creek, 2050 m, 31 Mar. 1978, *M.E. Lawrence 1397* (AD 98131070, voucher for chromosome count).

VICTORIA: Australian Alps, *s.d., F. Mueller* (MEL); Mt Baw Baw, 5000 ft, *s.d., F. Mueller* (MEL); both were initialed and cited by Bentham. Baw Baw, Mt Erica, 2 Jan. 1905, *H.B. Williamson* (MEL, Reference Collection, without varietal distinction). Mt Buffalo, 1350 m, *H.C. Stewart* (BRI 270950); valley E of the Horn, 27 Dec. 1951, *R. Melville 2659* (K). Bogong High Plains, Baker Spur Falls, 2 Feb. 1980, *R.J. Adair* (HO 59082); Watchbed Creek, 1640 m, near edge of fast-flowing creek, 10 Feb. 1982, *H. van Rees 314* (CANB 343121, HO 64361; both unusually robust, see above); c. 1 km E of Mt McKay, 1700-1750 m, 5 Jan. 1983, *A. Strid 22684* (CHR 397716, duplicates at B, C, M, MO, S, n.v.).

Senecio leptocarpus DC., Prodr. 6: 372 (1838); Hook.f., *Fl. Tasm.* 1: 222, Pl. 64-B (1856); Curtis, *Student's Fl. Tasm.* 2: 364 (1963); Harden, *Fl. N.S.W.* 3; 307 (1992). *S. pectinatus* DC. var. *pleiocephalus* Benth., *Fl. Austral.* 3: 665 (1867); non L. Rodway, *Tasm. Fl.* 93 (1903). *S. pectinatus* DC. var. *leptocarpus*, in L. Rodway, *Tasm. Fl.* 93 (1903).

TYPUS: Tasmania, Mt Wellington, *Gunn 268*. HOLOTYPUS: G-DC, on slip-tag: '268 [in peneil, rest in ink] / van Diemen / m^{r}. Gunn / env. par Lindley / 1834'; ISOTYPI seen: K ex Herb. Hook., 'Mt Wellington' [type of var. *pleiocephalus* Benth.]; K ex Herb. Benth.; NSW 153194; NSW s.n.; CGE in Herb. Lindley; CGE ex Herb. Lemann; OXF; others probably exist.

Perennial herb, *scape* somewhat deeumbent or ereet from a ereeping rhizome, 8 to 45 em tall. *Leaves* more or less crowded toward the base but eontinuing part way up the scapes, eventually reduced to braets well below the inflorescence; bases narrowed, rarely subpetiolate; blades obovate to oblanceolate, coarsely toothed to (rarely) lobate;

upper surfaces glabrous, dark green, often appearing brownish and as if varnished when dried, *lower surfaces* glabrate to sparsely hairy, silvery, with veins very distinct; *lower bracts* of scape with exserted teeth, *distal bracts* denticulate to entire. *Capitula* pressed to 1-1.5 cm across, excluding rays; usually in flattened cymes of (2-)3-6(-8) heads on peduncles 1-3(-6) cm long, rarely a solitary capitulum at apex of scape; peduncles with short reddish multicellular hairs. *Phyllaries* 13-16, 6-8 mm long; *calycular bracteoles* 7-8, (3-)4-4.5 mm long, linear-lanceolate. *Rays* 12-13, yellow, to 9 mm long, 2-2.7 mm broad; *disc florets* numerous (40-50). *Cypselae* 2.5-4(-5) mm long, glabrate, pappus hairs shiny straw-colored, 5-7 mm long, very slender.

DISTRIBUTION

Widely distributed in the mountains and plateaux of Tasmania and frequently collected. Said by Curtis (1963: 364) to descend to sea-level in the southwest, but I have not yet seen a specimen so labelled. Also said by her to be in Victoria, and by Harden to be in New South Wales. I have seen very few authentic collections from the mainland. Most specimens so identified have proven to be of the alpine variety of *S. pinnatifolius*, readily distinguished by their smaller, more numerous, capitula and very different leaves (below).

DISCUSSION

To me, *Senecio leptocarpus* is a very distinct species, and I have great difficulty with Bentham's reduction of it to a variety of *S. pectinatus*. Specimens, even the rare [immature?] individuals with only one developed capitulum are readily recognisable by the distinctive two-tone leaf of unique shape. A careful search of such specimens will often reveal one or more tiny axillary capitular buds.

Candolle contrasted his *S. leptocarpus* with his *S. pectinatus*, with the former in all parts larger. The achene of the former he gave as '2-2 1/2 lin.' (4.5 mm) long and therefore twice longer than that of *S. pectinatus*, hence 'leptocarpus' or slender fruit. That measurement is at variance with my note about the holotype of *S. leptocarpus*, which gives the [immature remaining?] achenes as '2.2 mm long, velutinous', versus 'achenes all very immature, 2 mm long' for *S. pectinatus*. Other specimens I have seen which agree in all other particulars with *S. leptocarpus*, however, have cypselae 4 mm long or longer and slightly fusiform.

Bentham reduced *Senecio leptocarpus* DC. to a variety of *Senecio pectinatus* DC., thereby creating (under modern practice, at least) the autonym, *S. pectinatus var. pectinatus*. The new var. *pleiocephalus* was typified by citation of 'Mt Wellington, *Gunn*', based on a sheet with six specimens in the 'type' folder at Kew, ex Hb. (W. J.) Hook., so determined by Bentham. Interestingly, in open spaces near the bottom of the sheet are several careful drawings of six floral details which were included in Plate 64-B by J.D. Hooker. The righthand drawing, of a ligulate floret [shown as Fig. 1 on the plate], has the cypsela extending onto the upper part of the field label. Evidently the son used this sheet in his father's herbarium in preparing the *Flora Tasmaniae before* Bentham annotated it.

The point is that Bentham's variety was based on an isotype of *Gunn 268*, the holotype of *S. leptocarpus* DC.

It would have been better had Bentham used the basionym for his new combination. But this was only accomplished, incidentally and perhaps unintentionally, by Leonard Rodway in 1903, under *S. pectinatus* as 'var. *leptocarpus*', followed by 'Leaves 2-3 inches long, broadly spathulate, coarsely obtusely toothed. Flowers [capitula] 3-6 in a loosely terminal panicle.' This belated citation of the autonym seems to have been universally disregarded in the swing back to recognition of *S. leptocarpus* as a distinct species.

The confusion of *S. pectinatus* var. *pleiocephalus* Benth. with the very distinct pseudolautusoid taxon described as *S. pectinatus* var. *pleiocephalus* L. Rodway (non Benth.) is discussed below under *S. pinnatifolius* var. *pleiocephalus* (L. Rodway) Belcher.

SELECTED OTHER SPECIMENS EXAMINED

TASMANIA: Antaret. Exped. 1839-1843, *J. D. Hooker s. n., s. loc.* (K, P, UPS); MeQuarrie Harbour, Mt Sorell, 3000 ft., 31 Dec. 1846, *J. Milligan 759* (K, cited by Bentham as Mt Sorrel; MEL, 2 sheets); Mt La Perouse, *s. d., C. Stuart s. n.* (K; MEL, MEL ex herb. Sonder, both with material of *S. pectinatus* also); Mt de la Perouse, Mar. 1857, [*C. Stuart*] *1867, 1868, 1869* (all MEL, unmounted); Mt Field East, 4000 ft, Jan. 1869, *F. Mueller* (MEL); Hartz Mtn., Jan. 1901, *Lucas 1901* (NSW 153195, 153196); Mt Wellington, 2. Feb. 1932, *C.T. White 8377* (BRI 270948). Cradle Mt, 10 Feb. 1947, *K. Helms* (HO 14683); National Park, 7 Jan. 1949, *L.B. Moore* (CHR 66851); Mt Field National Park, slopes of Mt Mawson, 23 Jan. 1949, *N.T. Burbidge 3294* (CANB 19594); St. Valentine's Peak, 26 Jan. 1962, *M.E. Phillips* (CBG 017855); King William, 4000 ft, 10 Feb. 1973, *D.A. & A.V. Ratkowski 153* (CHR 258284, MO); Moonlight Ridge, 840 m, under subalpine shrubbery, *20 Mar. 1984, A.M. Buchanan 2962* (HO 88425).

NEW SOUTH WALES: Carruthers Peak, Mt Koseiusko area, 6500 ft, 16 Feb. 1972, *P.A. Keane 2* (NSW), determined originally as *S. lautus* subsp. *alpinus* Ali at NSW but redetermined by me in 1986 as *S. leptocarpus*.

Senecio papillosus F.Muell., in *Trans. Philos. Inst. Victoria* 2: 69 (by 30 Sept. 1857, non 1858; see below), in *J. Bot. Kew Gard. Misc.* 9: 301 (Oct. 1857); Hook. f., *Fl. Tasman.* 2: 365 (1859) [citation to Muell., *Trans. Phil. Soc. Vict.* 1855, p. 69 is in error]; Benth., *Fl. Austral.* 3: 664 (1867); L. Rodway, *Fl. Tasm.* 93 (1903); W. Curtis, *Student's Fl. Tasm.* 2: 364 (1963), *Endemic Fl. Tasm.* 4: 244 (1973). Illus. M. Stones, *Endemic Fl. Tasm.* 4: Pl. 77, No. 128 (1973).

TYPUS: Tasmania, Mount de Perouse. 1 Mar. 1857, *Stuart 1870* [number on packet], LECTOTYPUS (**here chosen**) MEL 40319; ISOLECTOTYPUS K ex Hb. Hook.; REMAINING SYNTYPI: 'Senecio papillosus / ferd. Muell. / Mount La Peyrouse / V. D. L. Stuart [scripsit C. Willhelmi, teste D. Sinkora] / B [in pencil, 'seen by Bentham']' (K, MEL 40318).

Perennial herb with horizontal or vertical rhizome bearing each year a terminal whorl of leaves and a solitary inflorescence. *Scape* 10-15 cm tall, with 4-6 linear-lanceolate short acute bracts, lowest one toothed. *Leaves* 15-20 in cmpact rosette, to 2 cm long, 0.9 cm broad, subpetiolate, thick, ovate to elliptical with revolute entire margins; upper leaf surfaces densely studded with clear short straight or curved multicellular hairs from tuberculate bases; lower surfaces slightly cobwebby, with raised venation. *Capitulum* solitary, 3-4 cm in diameter including rays; *phyllaries* 13, 9-10 mm long, slender; *calycular bracteoles* 5-8, (6-)8-9 ml long. *Rays* 15-20, spreading, 10-15 mm long, bright yellow. *Cypselae* not seen.

DISTRIBUTION

Curtis (1973: 244) gave the distribution as 'Recorded only near the summits of Adamson's Peak and Mount La Perouse.' The two more recent collections cited below extend the range slightly, but this is still a very localised taxon, even more so than *S. primulaefolius* (below).

DISCUSSION

Certain difficulties with dates of publication and typifications of this species and *Senecio primulaefolius* are discussed below, following the treatment of the latter taxon.

Bentham (1867: 664) commented that this species 'may possibly prove to be a variety of the New Zealand *S. bellidioides*, Hook. f.'. In as much as Nordenstam (1978: 30) has transferred the latter species to *Brachyglottis* because of its cacalioid features, I raised this point in an inquiry to Kew. C. Jeffrey responded as follows (pers. comm.): '*S. primulifolius* and *S. papillosus* show no 'cacalioid' features whatsoever and are typically senecionoid (balusterform collars, anticlinal not polarized endothecial thickenings, cleft stigmatic surface).' I therefore reject Bentham's suggestion. From the standpoint of gross morphology, a New Zealand species coming closer to *S. papillosus* is *S. lagopus*, but Nordenstam has also transferred that species to *Brachyglottis*.

OTHER SPECIMENS EXAMINED

TASMANIA: Adamson's Peak: saddle between Max and Adamson, 3850 ft, frequent on saddle skeletal soil, 21 Jan. 1961, *Whaite 228* (NSW); e. 3600 ft, alpine herb field on upper slope, 7 Feb. 1969, *I.R. Telford 2474* (CBG 027894); 2500 ft, 22 Jan. 1972, *D.A. & A.V. Ratkowsky 3* (K, cited for Pl. 128, *Endemic Flora of*

Tasmania); peaty flat, alt. c. 1050 m, between rocks, 23 Jan. 1972, *D.A. & A.V. Ratkowsky* (HO 52777). Mt Babs, summit plateau, 31 Jan. 1984, *R.G. Williams* (Herb. D.I. Morris, Hobart). Pindar's Peak, alt. c. 920 m, alpine heath and sedge land, 17 Feb. 1986, *D. Zigler* (HO 97419).

Senecio primulaefolius F. Muell., in *Trans. Philos. Inst. Victoria* 2: 69 (by 30 Sept. 1857, teste H.I. Aston), in *J. Bot. Kew Gard. Misc.* 9: 300-1 (Oct. 1857) [both as *S. primulifolius*]; Hook. f., *Fl. Tasm.* 2: 365 (1859). *Senecio primulifolius* F. Muell. in Benth., *Fl. Austral.* 3: 664 (1867); L. Rodway, *Fl. Tasm.* 93 (1903); Curtis, *Student's Fl. Tasm.* 2: 364 (1963); Curtis, *Endemic Fl. Tasm.* 4: 244 (1973). Illustration: M. Stones, *Endemic Fl. Tasm.* 4: Pl.77, No. 129 (1973).

LECTOTYPUS (**here chosen**): Tasmania, Mt La Perouse, 1 Mar. 1857, *C. Stuart 1871*, K ex Hb. W. J. Hook., upper right specimen, ruled off from rest of sheet by pencilled line; ISOLECTOTYPI: MEL 40321 & 40322.

Note: I prefer a specimen retained by Mueller at MEL as representing his type, but this case presents special difficulties. Neither of the Stuart specimens of this taxon at MEL now has a capitulum, nor is there a packet on either sheet, as there is for the specimen at Kew. There can be no question that these MEL specimens agree vegetatively with the lectotype and are indeed '*S. primulifolius* / F. M.' as penciled in Stuart's script (teste D. Sinkora in litt.). Both are initialed 'B', seen by Bentham.

Perennial herb with horizontal rhizome, bearing each year an apical whorl of a few leaves and 1-2(-3) inflorescences. *Scapes* erect, 10-15(-30) cm. *Basal leaves* short- to long-petiolate, blades ovate-cordate and irregularly crenate or sinuate; upper surfaces glabrate or sparsely hairy, with sunken reticulate venation, lower surfaces purplish and glabrous or sparsely cobwebby; *bracts* 4-5, sessile and clasping, variable in size and shape, the lowest oblanceolate. *Capitula* (1-)2-4 per scape, 2.5-4 cm in diamter (including rays), peduncles 4.5-5.5 cm long. *Phyllaries* 13-21, 7-8(-10) mm long, acuminate. *Calycular bracteoles* numerous, to 6 mm long; phyllaries and bracteoles densely cottony-hairy. *Rays* 13-15 or more, golden yellow, to 2 cm long, 5 mm broad. *Cypsela* (immature) 2.5-3.5 mm long, glabrous, cylindrical with prominent basal annulus.

DISTRIBUTION AND CONSERVATION STATUS

Tasmania, southwestern District, Huon District [?]. Curtis (1973: 224) stated: 'Recorded only from Mt La. Perouse at an altitude of about 3000 feet'. Recent field work has slightly expanded the known distribution of this very localized and rarely collected endemic, represented in very few of all the herbaria which I have examined. In Leigh *et al.* (1981: 52) both it and *S. papillosus* are listed as risk code '3RC' [defined, p. 10]; i.e., '[3] range over 100 km, [R] rare, [C] known in a park or reserve'. Of the two, *S. primulaefolius* appears to be a little less restricted, but the ranges of both seem not be as great as indicated by Leigh *et al.* Further field work should clarify this.

COMMENT ON SPELLING OF SPECIFIC EPITHET

Mueller published this species as *Senecio primulifolius*, and this spelling has been followed in every publication in which it occurs that I have seen, except for J.D. Hooker's Addendum to his *Flora of Tasmania*. A careful consideration of the 'Tokyo Code' (Greuther, 1994) supports Hooker's spelling. Art. 60.8 (p. 74) [Art. 73.8 in the Berlin Code of 1988] states: 'The use of a compounding form contrary to Rec. 60G in an adjectival epithet is treated as an error to be corrected.' Rec. 60Gl (p. 78) distinguishes between (a) a true compound and (b) a pseudocompound, defined as a phrase treated as if it were a single compound word. In such a pseudocompound, a noun or adjective in a non-final position appears as a word with a case ending, not a modified stem. An example cited is *cannaefolius* (leaf of *Canna*). By analogy, 'leaf of *Primula*' [also a feminine generic name] should be '*primulaefolius*', as adopted here.

OTHER SPECIMENS EXAMINED

TASMANIA: 'Foot of Mount De La Perouse', *s.d., s.n.*, coll.?, Hb. Oldfield (K ex Hb. W.J. Hook., on same sheet as the lectotype); Mt La Perouse, Dec. 1897, *L. Rodway s.n.* (NSW 153197, HO 14844); Mt La Perouse,

Dec. *s. anno, Lucas s.n.* (NSW 153198): Reservoir Lake [La Perouse], Dec. 1898, *F. A. Rodway 5105* (NSW 153199); Mt Counsel [N of Cox Bight], alt. 2400', 19 Dec. 1954, *M. Davis 1449* (MEL 40320, without capitulum but unmistakable; most southwesterly specimen seen by me); Moonlight Flats, La Perouse, [1972], *Dr. & Mrs. Ratkowski s.n.* (K, basis for M. Stones' Pl. 77, No. 129, l.c.); 'Hill 1 (Huon [District?])', 15 Feb. 1977, *M. Allen s.n.* (Herb. D.I. Morris, Hobart). Southwest District, Moonlight Ridge, alt. 850 m, under subalpine shrubbery, 20 Mar. 1984, *A.M. Buchanan 2961* (HO 88424); ibid., Reservoir Lake, under ... subalpine shrubbery, 21 Mar. 1984, *A.M. Buchanan 2987* (HO 88357).

Problems peculiar to *Senecio primulaefolius* and *Senecio papillosus*

The first problem concerns the dates of publication of these two taxa. The conventional date for Vol. 2 of the *Transactions of the Philosophical Institute of Victoria* is given as 1858, but Aston (1984: Table 1, entry F [p. 283] & p. 286) has shown that this is not entirely true. According to her findings, Part 1 of Vol. 2, pp. 1-92, was published between the 23rd and 30th of September, 1857. This thus antedates the issuance in October, 1857 (Staffleu & Cowan, 1979: 299), of that part of Vol. 9 of Hooker's *Journal* containing pp. 289-320, including Mueller's descriptions of four new species from Tasmania.

Was Bentham aware of this earlier date for the first part of Vol. 2 of the *Transactions*? That a copy may have been sent to Kew is suggested by the fact that Bentham cited '*F. Muell. in Trans. Phil. Inst. Vict.* ii. 69' as the first reference under *S. papillosus*, and the only one for *S. primulifolius*. This is contrary to the later entries in *Index Kewensis* (Jackson, 1895, 2: 378 & 379) for both of these species as 'Hook. Kew Journ. IX (1857)'. These matters could perhaps be clarified by a diligent search in the library at Kew, which I have not been able to make.

A second question, about the typification of both of these taxa, is raised by this reversal of the sequence of publication. In his article in the *Proceedings*, Muller gave, for the former: 'On Mount Laperouse, south-western Tasmania. C. Stuart, A. Oldfield.', and for the latter: On Mount Lapérouse, Van Diemen's Land. C. Stuart, A. Oldfield.' Are there specimens collected by Oldfield that should be included as syntypes?

That Augustus Frederick Oldfield collected in Tasmania and elsewhere in Australia is not in question. Just when he did is not so clear. Vegter (1983: 619) gives: '*Herbarium*: K (plants from Tasmania, New South Wales, & Western Australia, coll. 1858-59μ and 'Tasmania (coll. ± 1858)'. There are some specimens of other species of *Senecio* [such as the type specimen of *S. leucoglossus* F. Muell. from Harvey River, W.A., (MEL, PERTH)], clearly collected by Oldfield but without date. But I have found no specimens of either of these two alpine species clearly laid in with his name.

The only clue I have found is a label on the lower left corner of the lectotype sheet of *S. primulaefolius* at Kew, applied to the four specimens ruled off from the Stuart type. This reads: '*Hb.* [italic mine] Oldfield / Foot (sic!) of Mt De La Perouse, Tasmania'. It is not explicit that the specimens were collected by Oldfield; they may have been given to him by Stuart. On the other hand, they may have actually been collected by Oldfield subsequent to the publication of this taxon, perhaps in 1858, and forwarded to W.J. Hooker. None of these alternatives, however, would account for Mueller's inclusion of Oldfield in the earlier paper.

In the absence of any specimen at either K or MEL of *S. papillosus* or of *S. primulaefolius* clearly identifiable as actually collected by Oldfield, I have to conclude that no Oldfield syntype of either taxon now exists. Mueller's inclusion of Oldfield's name in the Proceedings remains unexplained.

Even more puzzling is the fact that Bentham cited 'Mount Lapeyrouse, *Oldfield*' as his *only* specimens for *S. papillosus* and *S. primulifolius*, and as one of three cited from Tasmania for *S. pectinatus* [typical var.], and as one of three cited for var. *pleiocephalus*. I find it very strange that he made no mention of any Stuart specimen in connection with these scapose alpine taxa, despite having initialled Stuart specimens from both W. J. Hooker's and Mueller's herbaria as seen by himself.

The peculiar spelling of 'Mount Lapeyrouse' can be traced, as suggested by Helen Aston (*in litt.*), to two Stuart specimens from Mueller's herbarium [now MEL 40318 and 40322]. These are respectively labelled, in Carl Wilhelmi's handwriting, as from 'Mount la Peyrouse' and from 'Mount Lapéyrouse', with the 'y' [later?] struck through

on both. Both are initialled as seen by Bentham. Why he would attribute them to Oldfield rather than to Stuart is unclear.

In the *Proceedings of the Philosophical Institute* both taxa were described only in English, a part of a lengthy contribution [pp. 62-77] entitled 'New Australian Plants' from various parts of Australia including Tasmania. In the very slightly later brief paper in Hooker's *Journal*, all the text is in Latin. After the description of the former species he gave: 'Hab. In monte La Perouse Tasmaniae austro-occidentalis alpinae detexit *Stuart*.', followed by a lengthy paragraph of additional information not in the English version. Similarly, for the latter taxon he gave: 'Hab. In monte La Perouse Tasmaniae, *Stuart*.', again followed by additional details. In both cases, obviously, only the one collector is cited.

It is my belief that Mueller intended this much more scholarly and sharply focused paper to be the place of original publication and shipped it off to W.J. Hooker in that expectation, little dreaming that it would be delayed past the premature issue of the more general article in the *Proceedings*. This latter article also included on the same page the description, only in English, of *S. drymophilus* F. Muell., a *Gynura* from SE Queensland [cf. Belcher 1989: 533, erroneously as 1858]. Indeed, as I look over my copies of Mueller's descriptions of new taxa of *Senecio*, I find (in addition to that of *S. pectinatus* var. *ochroleucus*) just one other instance of a description only in English, that of *S. gregorii* [*Othonna gregorii* (F. Muell.) C. Jeffrey in *Kew Bulletin* 41: 876 (1986)].

Alpine state of *Senecio pinnatifolius* A. Rich. *s. lat.*

Senecio pinnatifolius A. Rich. var. ***pleiocephalus*** (L. Rodway) Belcher *comb. nov.*
Senecio pectinatus DC. var. *pleiocephalus* L. Rodway, *Tasm. Flora* 93 (1903); *non* Benth., *Fl. Austral.* 3: 665 (1867). '[*Senecio*] *pectinatus* DC. l.c. 372 / var. *pleiocephalus* [non] Benth. Fl. iii 665', Maiden & Betche, *Census N.S.W. Plants* 204 (1916), *nom. nud.*, per specimens so determined. *Senecio lautus* G. Forst. ex Willd. subsp. *alpinus* Ali, *Aust. J. Bot.* 17: 167 & Fig. 3 (1969); Willis, *Handbook Pl. Victoria* 2: 751 (1972).

HOLOTYPUS: Victoria, Mt Buffalo National Park, on SW margin of Lake Catani, c. 4500 ft, 21 Feb. 1963, *J. H. Willis s.n.* (MEL 666007).

LECTOTYPUS (**here chosen**): Tasmania, Mt Ironstone, 'Dc[c.] of [18] 99', *L. Rodway s.n.* (HO 14689, excluding specimen on extreme right, which is *S. pectinatus* var. *pectinatus*).

Perennial herb or subshrub, typically much branched both below and in the inflorescence, **occasionally ascendant and subscapose or scapose**; *lowest leaves* oblanceolate and dentate, sometimes petiolate; *mid-cauline leaves* pinnatifid to pinnatisect, lobes 2-4(-5) on either side and alternate to subopposite and lobulate or toothed, **sometimes reduced to lobulate bracts**, all divisions with enlarged callose apices. *Inflorescence* of several to numerous elongate or short branches each ending in 3-5 capitula, rarely fewer; *peduncles* with multicellular hairs terminating in wisps; *involucres* cylindrical; *phyllaries* 13, (3-)3.5-4.5 mm long and strongly bi-ribbed; *calycular bracteoles* whorled at apex of peduncle just below the receptacle, numerous, ciliolate, lanceolate to broadly triangular, 2-2.5 mm long, the tips atropurpureous. *Denuded receptacles* 3.5-4 mm in diameter. *Marginal florets* 11-13, ligules yellow, 5-6(-7.5) mm long, 1.5-2 mm broad; *disc florets* yellow, c. 40; *cypselas* c. 3 mm long, hairy or not. Fig. 2 illustrates a scapose specimen, *R. & R. Belcher 996*. Note: This description is greatly expanded from the very cryptic one given by Ali and the brief one by Rodway (below). Features confined to subscapose and scapose specimens are in boldface type.

DISTRIBUTION
Alpine and subalpine mountains and plateaux of Australian Capital Territory, SE New South Wales, NE Victoria, and Tasmania; subscapose and scapose specimens more rare than bushy ones.

Fig. 2. Scapose specimen of *Senecio pinnatifolius* A. Rich. var. *pleiocephalus* (L. Rodway) Belcher. Apex of rhizome with subpetiolate leaves and scapes with reduced pinnatilobate bracts; from *R. & R. Belcher 996,* Mt Franklin, A.C.T. (EMC).

DISCUSSION

Rodway described his var. *pleiocephalus* as: 'Tufted, stems numerous. Leaves spathulate and lobed, as in the type, but more dispersed on the stems, about 1 inch long. Stems 6-9 inches. Flowers [capitula] smaller than in the type [of *S. pectinatus*], in loose terminal panicle. Ironstone Mountain and western mountains. But for the peculiar outer bracts of the involucre, it would pass for a form of *S. lautus*.'

The lectotype specimen, HO 14689, I found at Hobart in a folder labelled '*Senecio leptocarpus*' and containing five other collections all clearly of that taxon. The sixth was labelled 'L. Rodway [s.n.] De of 99 Ironstone Mt / Senecio ~~lautus var.~~ pectinatus var. [in pencil]'. It also had an unsigned determinavit slip: 'Senecio leptocarpus / March 1976'. Although this sheet does not carry the varietal epithet 'pleiocephalus', the left and center specimens agree fully with Rodway's description of that variety. The deletion of 'lautus var.' on the label is undoubtedly reflected in his comment, above, concerning the 'peculiar outer bracts of the involucre'.

Actually, these bracteoles are in fact typical of the Australian pseudolatusoid material formerly included in *Senecio lautus*! I have been unable to establish why he made this comment. Had he been comparing the Ironstone Mt specimens (L & C) with authentic material of *S. lautus* from New Zealand, that comment would have been fully justified. But the only specimen of *S.lautus* that I logged at HO was collected in 1967. His description of these features under *S. lautus* (pp. 93-4) reads: 'The inner bracts [phyllaries] all equal, the outer al[l] short and / clothing [undefined] the base of the involucre.' This seems to fit those two specimens.

It has taken me nearly a decade to realise that Rodway was actually the first to name and describe this alpine taxon, with leaves so different in detail from the other pseudolautusoid material, and that his name has clear priority at the varietal rank (Greuter *et al.*, 1994: 16, Art. 11.4). If this taxon were retained at the subspecies rank, *alpinus* would have priority.

Although the Rodway description and specimens are of the scapose state, this state grades without any discontinuity through the subscapose states to the more common non-scapose material reresented by the holotype of subsp. *alpinus* Ali. Thus I expanded the above description to include all these phases.

I have (Belcher, 1993) contended that specimens of the pseudolautusoid complex so common in Australia are specifically distinct from *Senecio lautus* G. Forst. ex Willd. of New Zealand. I later (Belcher, 1994) analysed and illustrated the several names applied to these Australian plants by Richard and by Candolle. Further study has led me to consolidate these classical names as varieties of *Senecio pinnatifolius* A. Rich. s. lat., and also to reduce all the other Australian subspecies of *Senecio lautus* described by Ali to varietal status (Belcher in preparation).

SELECTED SCAPOSE AND SUBSCAPOSE SPECIMENS EXAMINED

AUSTRALIAN CAPITAL TERRITORY: Brindabella Range, Mt Franklin ski slope, 17 Dec. 1967, *R. & R. Belcher 996,* (EMC, 3 specimens, all scapose); *ibid. 997* (EMC, 5 specimens, all scapose).

NEW SOUTH WALES: Pretty Point, Mt Kosciusko, Jan. 1899, *J.H. Maiden & W. Forsyth s.n.* (AK 77541 ex NSW; K; NSW 55512; all scapose); Mount Kosciusko National Park, c. 4 1/2 miles [7.2 km] below Kosciusko Peak along main road, 14 Jan. 1962, *T.C. Chambers & S I. Ali s.n.* (MEL 1552932, 5 pieces, very pubescent, subscapose).

VICTORIA: Bogong High Plains just E of Rocky Valley storage, 1620-1700 m, grazed subalpine meadows, partly swampy, 15 Jan. 1983, *A. Strid 22076* (G 245696, subscapose; duplicates to B, C, CHR, M, MO, S, n.v.).

TASMANIA: Mt Barrow, talus slope below summit, 6 Feb. 1968, *R. & R. Belcher 1353* (EMC, 6 specimens, all scapose, retaining stumps of previuous inflorescences); Mt Field National Park, 2.5 miles [4 km] from Lake Dobson, spreading clump 1 ft [30 cm] in diameter, height to 15 in [38 cm], 17 Feb. 1968, *R. & R. Belcher 1502* (EMC, scapose whole plants); Ouse River S of Prince Albert's Throne, alt. 1200 m, 16 Mar. 1984, *A. Moscal 7011* (HO 83962, scapose); Lake Ada, Cent. Highlands Dist., alt. 1150 m, 20 Jan. 1985, *W.M. Curtis s.n.* (HO 95285, subscapose); Mt Wellington, just below the Organ Pipes, 6 Jan. 1987, *R.O. Belcher 2680* (EMC, subscapose).

Confusion over '*Senecio pectinatus* var. *pleiocephalus* Benth.'

Collections of mainland alpine taxa of *Senecio* became more numerous around 1890; some of these were of scapose pseudolautusoid radiates with multiple capitula. An

example is 'Mt Kosiusko, Pretty Point, Jan. 1899, *J.H. Maiden & W. Forsyth s.n.* (AK 77541, K, NSW 55512). This collection was identified [by Maiden?] as '*Senecio pectinatus* var. *pleiocephalus* Benth.' [non. L. Rodway], as were several other scapose and some non-scapose specimens. This eventually led to the listing of Bentham's name, without description, in *A Census of New South Wales Plants* (Maiden & Betche, 1916: 204), and later to the inclusion of *S. leptocarpus* in the mainland flora by some. Yet most mainland specimens thus identified under either name which I have examined are not *S. leptocarpus* but *S. pinnatifolius* var. *pleiocephalus* L. Rodway (non Benth.)! Indeed, Ali correctly cited NSW 55512 among his specimens of *S. lautus* subsp. *alpinus* (1969: 168).

I believe this confusion came about as a result of the discovery of these scapose radiates such as the Pretty Point specimens cited above. Mainland scapose radiates with a single large capitulum had already been included by J.D. Hooker and by Bentham in *S. pectinatus* (my var. *major*). Scapose radiates with multiple but smaller capitula must have semed to Maiden to fit Bentham's decription of *S. pectinatus* var. *pleiocephalus* as 'Flower heads rather smaller, 3 to 5 together in a loose terminal corymb.' The dificulty was in the lack of precision in 'rather smaller'. The mainland scapose specimens with multiple capitula had heads *much* smaller than the large ones of var. *major* and those of *S. leptocarpus*.

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